#### MOESI STATE TRANSITION ANALYSIS:

1. **Modified**: on processor read or write, do nothing and stay in Modified state
2. **Exclusive**: on processor read, do nothing; on processor write, transfer to Modified state; in case 1 and 2, there should be only one copy of data in the system
3. **Shared**: up to two types of states can exist in the system, if owned doesn’t exist, cache data is coherent with memory; if owned exists, only owned is responsible for writing data back to the memory; on processor read, do nothing; on processor write, invalidate all the other copies and transfer to Modified state
4. **Owned**: on processor read, do nothing; on processor write, invalidate all the other copies and transfer to Modified state; only the dirty bit of owned state should be set to true, not the Sharers
5. **Invalid**: on processor write, invalidate all the other copies and transfer to Modified state; on processor read, decide the states among Owned/Shared/Exclusive, but the return value needn’t take “write back to memory” into consideration